

REMARKS:

This application has been carefully studied and amended in view of the Office Action dated August 11, 2004. Reconsideration of that action is requested in view of the following.

Claim 1 has been amended to more clearly define the invention. As now amended claim 1 relates to an entertainment card which includes a substrate with a depiction of a person on the first side of the substrate. A transparent window is formed in the substrate at a location which includes a portion of the anatomy of the depicted person. The window thereby creates in the substrate an absence of that portion of the depicted anatomy. In particular, the absent portion of the anatomy includes a crease-like area. A key feature of the invention is that the absent portion of the anatomy can then be replaced or simulated by the user placing the user's digit(s) against the window on the second side of the substrate. As defined in Claim 1 the completion or replacement of the absent portion of the anatomy is thereby accomplished totally independently of any other portion of the card.

The remaining claims are dependent on claim 1. Note, however, is specifically made to method claim 20 which comprises the step of using the card of claim 1 and includes as a step the placement of the user's digit(s) against the window with a crease being formed in the digit so that the crease simulates the anatomical crease-like area of the absent portion of the depicted

person with the digit(s) giving the appearance of bare skin.

It is respectfully submitted that claims 1-16 and 18-29 are patentable over Mahoney and that claim 17 is patentable over Mahoney in view of Zeisky. Mahoney relates to a greeting card. Essentially, the only similarity between Mahoney and the present invention is that there is printed material on one side or in one portion of the greeting card and there is a cutout in the area of the printed material. Here, however, the similarity ends. Specifically, in Mahoney the missing information, as a result of the cutouts on front plate 3, is completed by information located on the back plate 4 which would be pressed against the front plate 3. Accordingly, it is essential in Mahoney that the card itself includes as structure the missing information on the back plate to fill in what is omitted from the front plate. The Mahoney greeting card thus totally lacks the main feature of applicants' invention wherein the missing portion of the picture is a person's anatomy and that the missing portion of the anatomy is supplied or completed by its simulation when the user's digit(s) is placed against the window which creates the absence of that portion.

Claim 1 has been amended to clearly differ from Mahoney in that claim 1 now states that the absence of the portion of the anatomy is completed at the window independently of any other portion of the card. This represents a key difference between the claimed invention as defined in parent claim 1 and Mahoney. It is

essential in Mahoney that the card itself include the absent portion. Specifically, it is essential that the back plate of the card has the portion missing from the front plate. Without the back plate the Mahoney invention is incomplete. In contrast, the missing portion in the invention of claim 1 is supplied by something totally independent of any other portion of the card. Thus, it is not necessary that the card include both a front plate and a back plate. Indeed the card could be a business card having no back plate. Alternatively, the card could include a back plate but the back plate has no function in supplying the portion missing from the front plate.

In rejecting the claims Examiner Carter apparently dismissed the feature defined in claim 1 of the card containing a depiction of a person with the missing portion of that picture being a portion of the anatomy having a crease-like area. Examiner Carter supported her position by reference to case law essentially stating that printed material does not give rise to patentability. Rather, it is structure which is important. Examiner Carter's attention is directed to In Re Gulack 703 F.2d 1381, 1385-86 (Fed. Cir. 2002) As a matter of convenience a copy of that opinion is attached. As stated by the Federal Circuit a claim can not be dissected to "excise the printed material from it, and declare the remaining portion of the mutilated claim to be unpatentable". (1385) Rather, "The bare presence or absence of a specific

functional relationship, without further analysis, is not dispositive of obviousness. Rather the critical question is whether there exists any new and unobvious functional relationship between the printed matter and the substrate." (1386) In Re Gulack is consistent with the case law cited by Examiner Carter in the sense that where there is a functional relationship of the printed matter to the substrate that relationship can be relied upon to distinguish over the prior art. With the present invention, the printed matter is not simply words, such as instructions, or is not simply pictures or other ornamentation. Rather, the printed matter has as an integral part thereof a window. Such window is a structural element of the substrate. The window is directly functionally related to the printed matter because the window creates an absence of a portion of the anatomy and more specifically of a portion of the anatomy which includes a crease-like area. Applicants' invention is based upon the recognition that the digit of a person, preferably a bent finger, would also create a crease-like appearance in such a manner that when the digit is pressed against the backside of the substrate at the window the structural feature of the substrate - the window - is then changed and the absent portion of the anatomy is simulated by the user's digit and moreover is simulated in the creation of an appearance of bare skin which is also related to the printed matter since it is that portion of the anatomy that is absent due to the

creation of the structural window. As such, there is an "unobvious functional relationship between the printed matter and the substrate" and the printed matter can not be excised from the claim to thereby focus on "the remaining portion of the mutilated claim to be unpatentable". Clearly, Mahoney in no way discloses, suggests or even remotely recognizes or teaches that the substrate should include printed matter which is altered by structurally creating a window in the printed matter and then by simulating what is missing from the window by something totally independent of any other portion of the substrate and more particularly could be simulated by the user's digit.

The conclusion of unpatentability is also particularly untenable with regard to method claim 20 and its dependent claims. Claim 20 includes as a positive step the placement of at least one digit of the user (which has a crease) wherein such placement is against the second side of the window so as to simulate the absent anatomical crease-like area of the depicted person in such a manner as to give the appearance of bare skin. Claim 20 is a method claim. Thus, the manipulative steps which include what a user does to supply the missing portion of the depicted person is a claim feature which must be considered when determining the question of patentability.

The present invention, because of the interrelationship between the substrate structure (window/cutout) and the picture,

provides unique features not possible with the Mahoney greeting card. As previously emphasized, with the present invention as brought in various claims, the card is not completed by any other portion of the card; rather it is completed by a human digit. This is an important distinguishing feature because it creates a card (business or greeting) in which the final visualized image is a function of whoever is holding the card; different fingers, for example, will cause the character on the card to have a different quality to the portion of the anatomy which the card depicts. This is different from the Mahoney greeting card which will be exactly the same every time (and involves only text, not an object or picture). The card of this invention will have a portion (the cutout) which will be 3-D, also uniquely different. The card of this invention is interactive, the holder of the card can manipulate his or her finger to bring the card character's anatomy to life, e.g., wiggle your finger and you wiggle the buttocks. A key to the card of this invention that also separates it from Mahoney is that the shape of the cutout is critical to the final effect. If you see too much or too little of the finger, you can completely lose the desired effect. The specific shape for each anatomy region will be unique, so that the portion of the index finger that shows through will best imitate that area of the anatomy. In summary the card of this invention is different in that:

- the area of the card immediately around the cutout will involve an image (likely of a person), never text;
- it will have a 3-D component;
- it will be interactive;
- the holder of the card will complete it and may "bring it to life" by moving the finger;
- it will not be completed by any other portion of the card;
- it will look uniquely different depending on who is holding the card, providing additional pleasure to the card holder;
- it will have a cutout that is uniquely shaped to allow the holder's underlying finger to best imitate that portion of the anatomy that is missing in the figure on the card (buttocks/breasts).

It is to be understood that in the above discussion the reference to specific features such as the finger or the specific anatomy or specific results is for exemplary purposes and is not intended to limit the claims by requiring features not otherwise recited in the claims.

If Examiner Carter has any suggestions for placing this application in its best form for allowance she is requested to telephone the undersigned attorney.

In view of the above amendments and remarks this application should be passed to issue.

Respectfully submitted,

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In re MAX A. GULACK

Appeal No. 82-580

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

703 F.2d 1381; 1983 U.S. App. LEXIS 13575; 217 U.S.P.Q. (BNA) 401

March 30, 1983

PRIOR HISTORY: Serial No. 935,183.

DISPOSITION: [**1]

Reversed

CASE SUMMARY

PROCEDURAL POSTURE: This matter came before the court on an appeal from a decision of the U.S. Patent and Trademark Office Board of Appeals sustaining the rejection under 35 U.S.C.S. § 103 of certain claims in a patent application.

OVERVIEW: Inventor filed a patent application. The stated object of the disclosed invention was to exploit certain arithmetic properties to create the semblance of magic or to educate with respect to intriguing aspects of number theory. The patent examiner rejected certain claims of inventor's application on grounds that the claims were not directed to statutory subject matter, pursuant to 35 U.S.C.S. § 101 (§ 101), and the claims were unpatentable over prior art, pursuant to 35 U.S.C.S. § 103 (§ 103). The U.S. Patent and Trademark Office Board of Appeals (board) reversed the examiner's § 101 rejection, but affirmed the § 103 rejection. On appeal, the court reversed. The appealed claims were not obvious, under 35 U.S.C.S. § 103, in view of the prior art. Moreover, the board incorrectly declined to accord printed matter contained in the invention patentable weight.

OUTCOME: The court reversed on grounds that the appealed claims were not obvious, and the board incorrectly declined to accord printed matter contained in the invention patentable weight.

CORE TERMS: band, digit, printed matter, invention, sequence, functional, endless, patentable, substrate, algorithm, subject matter, display, specification, quotient, ring, examiner, printed, hat, continuous, imprinted, recreational, educational, patent, aperture, unpatentable, disclose, non-statutory, manipulation, displayed, unobvious

LexisNexis(TM) Headnotes

Patent Law > Nonobviousness

[HN1]Differences between an invention and the prior art cited against it cannot be ignored merely because those differences reside in the content of the printed matter.

Patent Law > Nonobviousness > Tests & Proof of Obviousness

[HN2]See 35 U.S.C.S. § 103.

COUNSEL: C. Bruce Hamburg, of New York, argued for Appellant.

John W. Dewhirst, Associate Solicitor, of Washington, District of Columbia, argued for U.S. Patent and Trademark Office. With him on the brief were Joseph F. Nakamura, Solicitor, and Fred E. McKelvey, Associate Solicitor.

JUDGES: Friedman, Baldwin, and Smith, Circuit Judges. Friedman, Circuit Judge, dissenting.

OPINIONBY: SMITH

OPINION: [*1382] EDWARD S. SMITH, Circuit Judge.

This is an appeal from the decision of the U.S. Patent and Trademark Office Board of Appeals sustaining the rejection under 35 U.S.C. § 103 of claims 1-4 and 6 of application serial No. 935,183, filed August 18, 1978, entitled "Educational and Recreational Mathematical Device in the Form of a Band, Ring or Concentric Rings." We reverse.

I.

The stated object of the disclosed invention is to exploit certain arithmetic properties of all prime numbers larger than 5, P, n1 to create the semblance of magic or to educate with respect to intriguing aspects of number theory.

----- Footnotes -----

n1 The variable P is defined in the specification as any prime number (an integer not divisible without remainder by

any number except itself and unity) greater than 5. *E.g.*, 7, 11, 13, etc.

----- End Footnotes-----

[**2]

A.

The physical configuration of the invention is extremely simple. The appealed claims recite three key elements: (1) a *band*, ring, or set of concentric rings; (2) a plurality of individual *digits* imprinted on the band or ring at regularly spaced intervals; and (3) an *algorithm* by which the appropriate digits are developed.

The band n2 serves two functions: it supports the sequence of digits and it presents the digits as an endless sequence with no discrete beginning or end. The band is preferably an endless loop of paper, fabric, [*1383] or plastic material. Specific embodiments of the invention set forth in the specification and appealed claims include a belt, hatband, headband, skullcap border, necklace, ring, table edge, household device or utensil, jewelry, and other artifacts.

----- Footnotes-----

n2 As stated by appellant in his specification, band is intended to mean a band, ring, or set of concentric rings.

If $P = 7$ (a prime greater than 5);

then $Q = 999,999 / 7$; that is

$Q = 142,857$.

If $P = 13$, the smallest number of nines divisible by 13 that yields an integral quotient is 6,

thus $Q = 999,999 / 13$

$Q = 76,923$.

(Note that in accordance with the specification, $(P-1) / n = 6$, where $n = 2$, and $P = 13$.)

----- End Footnotes-----

[**4]

The specification describes three qualities of the sequence of digits Q, subject to manipulation for recreational or educational purposes. First, the digits have a "cyclic" nature. n4 Second, the number of digits in the prime P will fix the maximum number of digits

----- End Footnotes-----

The digits are integers, generated by the algorithm, and displayed at equal intervals [**3] on the outer surface of the band.

The algorithm for generating Q, the sequence of digits imprinted on the band, is also set forth in the specification.

A row of P-1 nines is always divisible by P to give a quotient Q which is an integral number.

Whenever a smaller number of nines is divisible by P to give an integral quotient Q, the number will always consist of some integral fractional part of P-1 nines, which may be designated as

$P-1 / n$,

in which n is an integer greater than 1.

* * * It will be found that the number of digits in the quotient Q will always be P-1 or some integral fraction of P-1. * * * n3

----- Footnotes-----

n3 To illustrate:

appearing in sequence in Q. For example, If P is 2 digits, Q or any multiple of Q, or cyclic variation of Q or any multiple of any cyclic variation of Q, if reduced to the original number of digits as aforesaid, will never contain any sequence of any 2 digits more than once. * * *

Finally, the digits of Q are subject to manipulation in accordance with procedures set forth in the specification to produce a series of nines.

----- Footnotes-----

n4 To simplistically illustrate this cyclic

feature:

If $P = 7$;
then $Q = 142,857$, and
 $2Q = 285,714$.

The sequence of digits is the same in each number; the starting position has merely shifted.

----- End Footnotes -----

Appellant recommends the 180 digit quotient Q (derived from $P = 181$), because its length [**5] is sufficient to lend mystical qualities to the manipulation of the band yet short enough to be readily imprinted on the band. The MAGIC RING OF HAYIM, constructed in accordance with the appealed claims, is capable of manipulation as set forth in the specification to perform magic tricks or to display various aspects of number theory.

The appealed claims read as follows:

1. An educational and recreational mathematical device comprising at least one band which is endless or adapted to have ends thereof fastened to form an endless band and a plurality of individual digits imprinted on the band at regularly spaced intervals, the digits when all read consecutively clockwise as a number constituting a quotient obtained by dividing a number constituted of

$P-1 / n$

nines, in which P is a prime number greater than 5 and n is an integer at least 1, by P and adding to the lefthand end of said quotient any number of zeros necessary to increase the number of digits in said quotient to

$P-1 / n$,

n being so selected that

$P-1 / n$

[*1384] nines is the minimum number of nines divisible by P so that said quotient is an integral [sic] number.

2. Device according to claim [**6] 1, in which said band is endless.

3. Device according to claim 1, in which said band comprises an article of apparel.

4. Device according to claim 3, in which said band is part of a hat or cap.

6. Device according to claim 1 in which said band is an article of jewelry.

B.

The examiner rejected claims 1-4 and 6 on two grounds: as not directed to statutory subject matter, 35 U.S.C. § 101; and as unpatentable over Wittcoff, n5 35 U.S.C. § 103. The board reversed the section 101 rejection, finding that the claims define an article of manufacture covered by 35 U.S.C. § 101.

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n5 E. Wittcoff, U.S. patent No. 2,796,680, issued June 25, 1957, for "Novelty Educational Hats." Wittcoff discloses a hat with an endless band having information printed in areas around both the inside and outside of the band. The hat has an aperture at the base of the crown through which an area of the band is viewed. The band can be rotated to align any specific area of information with the aperture. When an inquiry on the outside of the band is aligned with the aperture, the corresponding answer is viewed through the aperture from the inside of the hat.

----- End Footnotes -----

[**7]

In his section 103 rejection, the examiner stated that the appealed claims differed from Wittcoff only in the specific digits printed on the band. The examiner found no relationship between appellant's digits and band except that the band is the surface on which the digits are printed. The examiner cited *In re Miller* n6 for the proposition that "mere printed matter can not impart a patentable feature to a claim." Applying *Parker v. Flook*, n7 the examiner viewed applicant's digits as well known and unable, therefore, to define over Wittcoff.

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n6 *In re Miller*, 57 C.C.P.A. 809, 418 F.2d 1392, 164 U.S.P.Q. (BNA) 46 (1969).

n7 Parker v. Flook, 437 U.S. 584, 57 L. Ed. 2d 451, 98 S. Ct. 2522, 198 U.S.P.Q. (BNA) 193 (1978).

----- End Footnotes-----

In affirming the 103 rejection, the board found no meaningful relationship between the digits and the band of the type indicated by the court in *Miller*. Unlike the fact situation in *Miller*, the printed indicia claimed herein [convey] no meaningful information in regard to the [**8] substrate [they are] arranged on, [do] not require any size relationship of the substrate, and [do] not require any particular substrate to effectively convey the information. We are convinced that *there is no meaningful functional relationship between appellant's indicia and the claimed endless band*.

* * * In our opinion, the endless loop formed by the hatband with numerical digits printed thereon is the same structure claimed by appellant and *the sole difference is in the content of the printed material*. Accordingly, *there being no functional relationship of the printed material to the substrate, as we have noted above, there is no reasons [sic] to give patentable weight to the content of the printed matter which, by itself, is non-statutory subject matter*.

The rejection of claims 1 to 4 and 6 under 35 USC § 103 is sustained. [Emphasis supplied.]

We understand the board as not giving the printed matter patentable weight because the board felt that there is no functional relationship between the printed matter and the substrate. In doing so, we do not interpret the board as holding that the printed matter can be ignored because it, by itself, [**9] is non-statutory subject matter. The board cited no authority in analyzing the relevance of the lack of a functional relationship, or of the status of the printed matter as non-statutory subject matter, to its decision not to accord the printed matter patentable weight. Because of the possible ambiguity of the board's articulation of its holding, we feel compelled to clarify the distinction.

[*1385] [HN1] Differences between an invention and the prior art cited against it cannot be ignored merely because those differences reside in the content of the printed matter. n8 Under section 103, the board cannot dissect a claim, excise the printed matter from it, and declare the remaining portion of the mutilated claim to be unpatentable. The claim must be read as a whole. n9 If the board meant to disregard that basic principle of claim interpretation, we must reverse the rejection as a matter of law.

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n8 A "printed matter rejection" under § 103 stands on questionable legal and logical footing. Standing alone, the description of an element of the invention as printed matter tells nothing about the differences between the invention and the prior art or about whether that invention was suggested by the prior art. A printed matter rejection is based on case law antedating the 1952 patent act, employing a point of novelty approach. *In re Sterling*, 21 C.C.P.A. 1134, 70 F.2d 910, 21 U.S.P.Q. (BNA) 519 (1934). The 1952 act legislatively revised that approach through its requirement that the claim be viewed as a whole in determining obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 148 U.S.P.Q. (BNA) 459, 15 L. Ed. 2d 545, 86 S. Ct. 684 (1966). The CCPA has considered *all* of the limitations of the claims, including the printed matter limitations, in determining whether the invention would have been obvious. See *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. (BNA) 580 (CCPA 1974); *In re Cavrich*, 59 C.C.P.A. 883, 451 F.2d 1091, 172 U.S.P.Q. (BNA) 121 (1971). In *Royka*, 490 F.2d at 985, 180 U.S.P.Q. (BNA) at 583, the CCPA, notably weary of reiterating this point, clearly stated that printed matter may well constitute structural limitations upon which patentability can be predicated.

[**10]

n9 [HN2] 35 U.S.C. § 103 (1976) specifically provides that:

"A patent may not be obtained * * * if the differences between the subject matter sought to be patented and the prior art are such that *the subject matter as a whole* would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. * * *" (Emphasis supplied.)

See *Graham*, 383 U.S. 1, 148 U.S.P.Q. (BNA) 459, 15 L. Ed. 2d 545, 86 S. Ct. 684; *Flook*, 437 U.S. at 594 n.16, 198 U.S.P.Q. (BNA) at 199 n.16 (noting the § 103 requirement of reading claims as a whole and extending that requirement to §

101); Diamond v. Diehr, 450 U.S. 175, 188, 209 U.S.P.Q. (BNA) 1, 9, 67 L. Ed. 2d 155, 101 S. Ct. 1048 (1981) (also applying that requirement in a § 101 setting); Royka, 490 F.2d at 985, 180 U.S.P.Q. (BNA) at 583.

----- End Footnotes-----

If, instead, the board sought only to construe and apply *Miller* within the context of a section 103 rejection, we find no error in the board's articulation of the law. Where the printed matter is not functionally related to the substrate, the printed matter will not distinguish [**11] the invention from the prior art in terms of patentability. n10 Although the printed matter must be considered, in that situation it may not be entitled to patentable weight. This, apparently, was the board's conclusion with respect to Gulack's invention.

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n10 Miller, 57 C.C.P.A. 809, 418 F.2d 1392, 164 U.S.P.Q. (BNA) 46.

----- End Footnotes-----

However, because we find that the digits of Gulack's invention are functionally related to the band, and because Wittcoff fails to disclose or suggest the subject matter recited in the appealed claims, considered as a whole, we reverse.

The sole issue is whether the board correctly affirmed the rejection of the appealed claims as obvious in view of Wittcoff under 35 U.S.C. § 103.

II.

The board, responding to appellant's arguments based on *In re Miller*, n11 found no functional relationship of the type present in *Miller*.

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n11 *Id.*

----- End Footnotes-----

[**12]

A.

Miller involved an appeal from the board's affirmance of the rejection of claims drawn to a measuring device for use in fractioning recipes. No statutory ground for

the rejection was specified. The rejection in *Miller* was on the basis that the invention lacked "the required cooperative structural relationship necessary before the printed matter can be given patentable weight." n12

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n12 418 F.2d at 1395, 164 U.S.P.Q. (BNA) at 48.

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[*1386] The CCPA n13 responded, stating: n14it seems to us that what is significant here is not structural but *functional* relationship * * *.

As for the examiner's characterization of the indicia and legend as "unpatentable printed matter," we note that the examiner himself recognizes the fact that printed matter, in an article of manufacture claim, *can* be given "patentable weight." He did so in allowing claims. His characterization of printed matter as "unpatentable" is beside the point; no attempt is here being made to patent printed matter as such. [**13] The fact that printed matter *by itself* is not patentable subject matter, because non-statutory, is no reason for ignoring it when the claim is directed to a combination. Here there is a new and unobvious functional relationship between a measuring *receptable*, volumetric *indicia* thereon indicating volume in a certain ratio to actual volume, and a *legend* indicating the ratio, and in our judgment the appealed claims properly define this relationship. * * * [Emphasis in original.]

The court found that the printed matter of *Miller's* invention was functionally related to the volume measuring device and reversed the rejection.

----- Footnotes-----

n13 The holdings of the United States Court of Customs and Patent Appeals and of the United States Court of Claims were adopted as precedent in the Court of Appeals for the Federal Circuit in South Corp. v. United States, 690 F.2d 1368, 1370, 215 U.S.P.Q. (BNA) 657, 658 (Fed. Cir. 1982).

n14 Miller, 418 F.2d at 1396, 164 U.S.P.Q. (BNA) at 48-49.

----- End Footnotes-----

B.

Similarly, in examining **[**14]** Gulack's invention, we find that a functional relationship does exist between the printed matter and the substrate. A functional relationship of the precise type found by the CCPA in *Miller* -- to size or to type of substrate, or conveying information about substrate -- is not required. What is required is the existence of *differences* between the appealed claims and the prior art sufficient to establish patentability. The bare presence or absence of a specific functional relationship, without further analysis, is not dispositive of obviousness. Rather, the critical question is whether there exists any new and unobvious functional relationship between the printed matter and the substrate. ⁿ¹⁵ With these thoughts in mind we turn now to examine the obviousness of the appealed claims in light of the cited reference, Wittcoff.

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ⁿ¹⁵ *Id.* at 1396, 164 U.S.P.Q. (BNA) at 49.

----- End Footnotes-----

III.

Appellant and the board agree that the sole difference between the appealed claims and Wittcoff resides in the content of the printed **[**15]** matter. The board declined, however, to accord that printed matter patentable weight.

Wittcoff discloses the application of printed matter to a band. The printed matter suggested by Wittcoff is data that is to be committed to memory, such as addition, subtraction, multiplication, history dates, historical personages, and the like. The data items are independent, bearing no direct relation to the other data entries on Wittcoff's band. The relationship of the Wittcoff data to the band is for purposes of support and display. The data must be imprinted on the band so that the answer to the inquiry displayed on the outer surface of the band is visible when viewed from inside the hat through the aperture. Wittcoff discloses an endless band, yet the areas of printed matter displayed on the Wittcoff band are not arranged in any particular sequence.

The appealed claims, on the other hand, require a particular sequence of digits to be displayed on the outside surface of a band. These digits are related to the band in two ways: (1) the band supports the digits; and (2) there is an endless sequence of digits -- each digit residing in a unique position with **[*1387]** respect to every **[**16]** other digit in an endless loop. Thus, the digits exploit the endless nature of the band.

The differences between the appealed claims and Wittcoff reside in appellant's particular sequence of digits Q, and in the derivation of that sequence of digits. These features are critical to the invention disclosed by the appealed claims. Wittcoff neither discloses nor suggests either feature.

IV.

We reject the board's conclusion that there is no functional relationship between the printed matter and the substrate of the appealed claims. Such a relationship does exist and it is different from the relationship exhibited by the corresponding elements of the Wittcoff reference. We find no suggestion in the cited reference of appellant's particular sequence of digits Q or of the derivation of that sequence.

REVERSED.

DISSENTBY: FRIEDMAN

DISSENT: FRIEDMAN, Circuit Judge, dissenting.

I would affirm the Board's decision sustaining the rejection of the claimed invention as obvious under section 103.

The appellant's primary claim is for "an educational and recreational mathematical device," namely, an endless band upon which are imprinted numbers in a particular sequence derived from the application **[**17]** of an algorithm. Subordinate claims describe the band as an article of apparel, part of a hat or cap, or an article of jewelry.

The algorithm is not patentable and "is treated as though it were a familiar part of the prior art." *Parker v. Flook*, 437 U.S. 584, 592, 57 L. Ed. 2d 451, 98 S. Ct. 2522 (1978). Similarly, the particular numbers produced by an abstract solution of the algorithm cannot themselves be claimed, although the practical application of those numbers may be patentable. See *In re Meyer*, 688 F.2d 789, 215 U.S.P.Q. (BNA) 193 (CCPA 1982); *In re Abele*, 684 F.2d 902, 214 U.S.P.Q. (BNA) 682 (CCPA 1982). The issue under section 103 is whether, to one of ordinary skill in the art of developing algorithms and applying their product for educational or recreational purposes, it would have been obvious to apply the algorithm by displaying the result of its solution on a continuous band, as the appellant disclosed in his patent application. The Board correctly answered that question affirmatively.

The *Wittcoff* patent teaches the use of a hatband to display numbers as an "educational or game-playing device." Although there are differences between the display of numbers in appellant's **[**18]** invention and their display in *Wittcoff*, it would have been obvious from *Wittcoff* for one of ordinary skill in the art who

wanted to use the numbers the algorithm produced for appellant's purposes, to display them on a continuous band. Indeed, one of the appellant's subordinate claims displays the numbers on a hat or cap.

The display of the numbers on a band or other object that permits them to be shown in a series without a particular beginning or end would have been obvious even without *Wittcoff*. The numbers can be used for the recreational and educational purposes the appellant claims merely by arranging them in a continuous series. They do not need to be placed on an "endless band" as the appellant claimed. In fact, at oral argument the appellant conceded that the same result his invention accomplishes also could be accomplished by placing the numbers in a continuous series upon a cube or other shape, or even by writing them in a circle upon a flat surface. The precise nature of the object on which the numbers are placed is thus of little importance. The only matter that is of significance -- the arrangement of the numbers as a continuous series -- would have **[**19]** been obvious to anyone of ordinary skill in the art who knew the algorithm.

In *In re Miller*, 57 C.C.P.A. 809, 418 F.2d 1392, 164 U.S.P.Q. (BNA) 46 (1969), as the court points out, the court determined that there was "a new and unobvious functional relationship" between the measuring receptacles and the descriptions and legends on **[*1388]** them. In the present case, unlike *Miller*, I do not think that the "functional relationship" between the numbers resulting from the application of the algorithm and their display upon the continuous band was new and unobvious.